

Long-Life, Oil-Free, Light-Weight, Multi-Roller Traction Drives for Planetary Vehicle Surface Exploration, Phase II

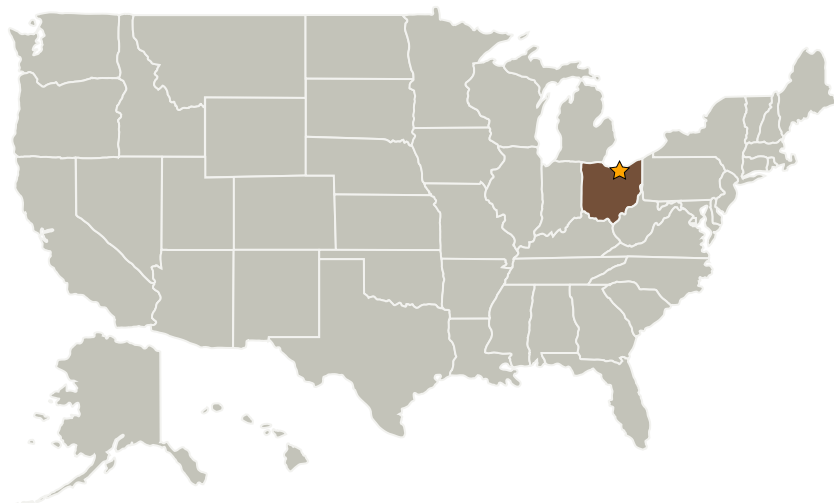
Completed Technology Project (2007 - 2009)



Project Introduction

A multi-roller "oil free" traction drive is under development for use on vehicles used in hostile environments like those that will be encountered on planetary surfaces. The drive has been designed to meet the operating requirements of for an Apollo-class Lunar Rover. A drive geometry optimization study was conducted establishing that a 30-to-1, two-row, four planet multi-roller drive offers the best balance between size, weight, simplicity, motor operating speed and operational life. The drive can function without the use of liquid lubricants and will be able to operate at very cold temperatures and over a wide range of temperatures by using low wear, high friction solid lubricant materials. Liquid lubricants currently used in gear drives tend to become too viscous to flow at low temperature and too thin to lubricate at high temperatures. Because these drives use no liquids, "oil free" traction drives will not encounter the problems associated with the changing oil viscosities of liquid lubricants which will enable them to operate reliably over a wide range of temperatures. Also contamination of the lunar soil will not be a problem because there is no liquid to vaporize or leak.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Nastec, Inc.	Supporting Organization	Industry	Brook Park, Ohio

Primary U.S. Work Locations

Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.3 Aero Propulsion
 - └ TX01.3.10 Turboelectric Propulsion